

Illinois Environmental Protection Agency
Bureau of Air
March 2014

Responsiveness Summary for
Comments and Questions on the
Revision to the Construction Permit for the
Tier 2 Low Sulfur Gasoline Project for
Phillips 66 Company in
Roxana, Illinois

Permit No.: 01120044
ID No.: 119090AAA

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DECISION

On March 17, 2014 the Illinois Environmental Protection Agency (Illinois EPA) Bureau of Air issued a revised construction permit to Phillips 66 Company for the Tier 2 Low Sulfur Gasoline Project. At the same time, the Illinois EPA issued this Responsiveness Summary to address questions and comments submitted to the Illinois EPA concerning the proposed issuance of a construction permit for this project.

BACKGROUND

Phillips 66 Company operates the Wood River Refinery located in Roxana. Phillips 66 Company has requested a revision to the air pollution control construction permit for the Tier 2 Low Sulfur Gasoline Project. The purpose of this project is to reduced sulfur in the fuels, in part, by desulfurization of various sulfur containing intermediate streams involved in the production of gasoline. Various hydrotreating techniques are used to enable the desulfurization to occur. The requested revision would account for additional sulfur dioxide (SO₂) emissions at units combusting refinery fuel gas that were constructed or affected by this project. The increases in SO₂ emissions account for sulfur compounds in the fuel gas besides hydrogen sulfide. The original application for this project only accounted for the hydrogen sulfide in refinery fuel gas.

The revised permit would provide for an increase in SO₂ emissions for affected combustion units, i.e., the Low Sulfur Gasoline (LSG) Flare, Boiler 17 and Heater HM-1, that combust refinery fuel gas.

The requested revision would only involve SO₂ emissions. When the original permit was issued in 2002, Madison County was attainment¹ for SO₂, so the application compared the project emission increases with the major modification threshold in the federal rules for Prevention of Significant Deterioration of Air Quality (PSD), 40 CFR 52.21. This comparison showed that the project was not a major modification. This comparison was updated for the revised permit and continues to show that the project is not a major modification.

COMMENT PERIOD

The Illinois EPA, Bureau of Air evaluates applications for permits for proposed sources of emissions. An air pollution control permit application must appropriately address compliance with applicable air pollution control laws and regulations before a permit can be issued. Following its initial technical review of the application from Phillips 66 Company, the Illinois EPA Bureau of Air made a preliminary determination that the application met the standards for issuance of a construction permit and prepared a draft

¹ Although the attainment status for PM_{2.5} has changed (Madison County is now designated as nonattainment for the annual PM_{2.5} National Ambient Air Quality Standard with SO₂ being a precursor), the application appropriately evaluated the change in SO₂ emissions against the applicable rules in place at the time the permit was initially issued.

permit for public review and comment. Comments on the draft permit were only received from USEPA.

AVAILABILITY OF DOCUMENTS

Copies of the construction permit issued to Phillips 66 Company and this Responsiveness Summary are available by the following means:

1. From the Illinois Permit Database on the Internet:

<http://www.epa.gov/region5/air/permits/ilonline.html>

(Find the documents under All Permit Records (sorted by name), Construction Permit Records).

2. By contacting the Illinois EPA by telephone, facsimile or electronic mail:

Illinois EPA

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COMMENTS AND QUESTIONS WITH RESPONSES BY THE ILLINOIS EPA

1. The current modification to the "LSG Flare," resulting in emissions decreases of SO₂, may not be used to offset the emission increases from the Tier 2 Low Sulfur Gasoline Project permitted in 2002. Since the connection of the flare gas recovery compressor for this flare was not originally permitted and/or constructed as proposed in the current permit revision, the proposed modification to the LSG Flare should be treated as a separate project. Any emission decreases and increases associated with the current LSG Flare modification should not be counted as emission decreases or increases for the 2002 project. The draft permit revision incorrectly relies on an SO₂ emission decrease resulting from the changes to the LSG Flare to offset an SO₂ emission increase related to the "Tier 2 Project" construction/modification in 2002.

The Illinois EPA agrees with the observation made in this comment. As the comment points out, relying on decreases from a separate project is not allowed in the initial step of New Source Review applicability.

Upon reflection, it was realized that the change in emissions at the LSG Flare was not properly characterized in the Illinois EPA's Project Summary. The Project Summary states that the "lower SO₂ emission limit is being requested as this flare is now connected to a flare gas recovery compressor, which will recover a portion of the gases that

would have otherwise been sent to the flare." While flare gas recovery equipment was connected to this flare in 2011, the SO₂ emissions reductions realized by this connection were not relied upon in this revised permit. In fact, there are specific Consent Decree² provisions which prohibit the use of such credits to offset other projects.

The quantification of emissions for the LSG Flare in the original application considered the combustion of a high-sulfur content "sour" stream that would be routinely directed from a Caustic Extraction Unit to the LSG Flare. That unit was never built. Therefore that sour stream was never actually directed to the LSG Flare. The SO₂ emissions attributable to combustion of this sour stream in the LSG Flare accounted for almost all of its permitted 18 tons/year (tpy). It is appropriate to consider the LSG Flare's potential SO₂ emissions to be 3.0 tpy since the Caustic Extraction Unit was not built. In actual practice, both since startup and currently, the LSG Flare operates as an emergency only flare and is certified as such under the Consent Decree. Even before the flare gas recovery project, SO₂ emissions from the LSG Flare were consistently less than 1.0 tpy.

2. The current permit revision incorporates higher emissions of SO₂ coming from Boiler 17. The current analysis, as presented within the Project Summary on page 3, states that the SO₂ emissions from Boiler 17 are 26.4 tpy. In 2002, the PTE from Boiler 17 was calculated to be 2.89 tpy. The corrected emission calculation of the PTE of 26.4 tpy combined with the emissions increases from other modified units in 2002 are greater than the significance threshold of 40 tpy. Therefore, IEPA should proceed to the second step of the PSD applicability review process to determine if the 2002 project results in a "significant net emissions increase."

With the correct LSG Flare SO₂ emission rate of 3.0 tpy, the total emissions increases from this project continue to be below the significance threshold. As explained above, without the construction of the Caustic Extraction Unit, the actual LSG Flare SO₂ emissions have been well below 3.0 tpy since the original project began operation and 3.0 tpy reflects an appropriate value for the original potential emissions of the LSG flare. Therefore, even if the original project had been permitted with SO₂ emissions based on total sulfur content of the fuel gas rather than H₂S content, PSD would not have been triggered.

² 2005 Refinery Enforcement Initiative Consent Decree (Civil Action H-05-0258).

FOR ADDITIONAL INFORMATION

Questions about the public comment period and permit decision should be directed to

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**Listing of Significant Changes between
the Draft Permit And the Issued Permit**

Condition 1.1.1: The project description now clarifies that the Caustic Extraction Unit was never built. This clarifies the scope of the Tier 2 Low Sulfur Gasoline Project as actually constructed, as is now relevant for this revised permit. The condition also observes that this permit does not authorize construction of a Caustic Extraction Unit.

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